PROPOSED REMEDIAL OBJECTIVES REPORT
7TH STREET AND MISSOURI AVENUE
WQARF REGISTRY SITE
PHEONIX, ARIZONA

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Arizona Department of Environmental Quality
Remedial Projects Unit
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LIST OF ABBREVIATIONS & ACRONYMS

A.A.C.	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
A.R.S.	Arizona Revised Statutes
AWQS	Aquifer Water Quality Standard
cis-1,2-DCE	*cis*-1,2-dichloroethene
COC	Contaminants of Concern
FS	Feasibility Study
GPL	Groundwater Protection Level
LWUS	Land and Water Use Study
$\mu g/m^3$	Micrograms per cubic meter
mg/kg	Milligrams per kilogram
µg/L	Micrograms per liter
PCE	Tetrachloroethene
RO	Remedial Objective
RI	Remedial Investigation
SRP	Salt River Project
SRL	Soil Remediation Level
TCE	Trichloroethene
WQARF	Water Quality Assurance Revolving Fund

1.0 INTRODUCTION

The Arizona Department of Environmental Quality (ADEQ) has prepared this Proposed Remedial Objectives (ROs) report for the 7th Street and Missouri Ave Water Quality Assurance Revolving Fund (WQARF) Registry Site (the site) to meet requirements established under Arizona Administrative Code (A.A.C.) R18-16-406.

The 7th St and Missouri Ave WQARF site is located in north central Phoenix. The boundaries of this Site are approximately Bethany Home Rd to the north, Georgia Avenue to the south, 6th Street to the west and 12th Street to the east. Contaminants of concern (COCs) for the site are tetrachloroethene (PCE), trichloroethene (TCE), and *cis*-1,2-dichloroethene (cis-1,2-DCE). PCE is the most prevalent contaminant in the samples analyzed.

This RO report relies upon the land and water use study questionnaires collected in 2017 and 2018 and the solicitation of proposed Remedial Objectives during the comment period on the Draft Remedial Investigation report (RI) in 2018. The land and water use questionnaires are included the Land and Water Use Study (LWUS), Appendix J of the 7th and Missouri RI Report prepared by Pinyon Environmental, Inc., for ADEQ.

ROs are established for the current and reasonably foreseeable uses of land and waters of the state that have been or are threatened to be affected by a release of a hazardous substance. Pursuant to A.A.C. R18-16-406(D), it is specified that reasonably foreseeable uses of land are those likely to occur at the site and the reasonably foreseeable uses of water are those likely to occur within one hundred years, unless site-specific information suggests a longer time period is more appropriate.

Reasonably foreseeable uses are those likely to occur, based on information provided by water providers, well owners, land owners, government agencies, and others. Not every use identified in the RI Report will have a corresponding RO. Uses identified in the RI Report may or may not be addressed based on information gathered during the public involvement process, limitations of WQARF, and whether the use is reasonably foreseeable.

The ROs must be stated in the following terms: (1) protecting against the loss or impairment of each use; (2) restoring, replacing, or otherwise providing for each use; (3) when action is needed to protect or provide for the use; and (4) how long action is needed to protect or provide for the use.

The ROs chosen for the site will be used to evaluate specific remedial measures and strategies in the feasibility study (FS) phase of the WQARF process. A remedial strategy is one or a combination of six general strategies identified in Arizona Revised Statutes (A.R.S.) §49-282-06(B)(4). These

strategies include: plume remediation, physical containment, controlled migration, source control, monitoring, and no action. A.R.S. §49-282-06(B)(4)(a) indicates that for remediation of soil, the selected remedial action shall be consistent with the soil remediation standards adopted pursuant to A.R.S. §49-152. A remedial measure is a specific action taken in conjunction with remedial strategies to achieve one or more ROs (for example, well replacement, well modification, water treatment, water supply replacement, and engineering controls.)

Written comments on this proposed RO report were accepted in a 60-day period following the release of the Draft Proposed RO report on May 31, 2018. Due to significant changes to the ROs due to new information gathered during this period, the comment period has been extended on the revised ROs for an additional 30 days. The final report will include a responsiveness summary to written comments received from the public from both public comment periods. The final RO Report will be an appendix to the final RI Report.

2.0 REMEDIAL OBJECTIVES FOR LAND USE

The site is located in a mixed commercial and residential area. Based on the LWUS, land use in the area is characterized as commercial, single family residential, and multi-family residential. Commercial uses are predominately Intermediate Commercial and Restricted Commercial. According to the LWUS, there are no immediate plans to change the land use or zoning for properties in the site. Generally, commercial properties are concentrated near the southern portion of the Site while residential properties are concentrated near the northern extent of the Site.

2.1 Summary of Impacts to Current and Reasonably Foreseeable Land Use

One location at the site exceed non-residential Soil Remediation Levels (SRLs) PCE at multiple depths. The location was in a soil boring under the floor of an underground parking structure of the building located on parcel 162-21-041A. In this location, PCE was detected in soil at 10,400 milligrams per kilogram (mg/kg) at approximately 36 feet below ground surface (bgs), and at 5040 mg/kg at approximately 46 feet bgs, exceeding the non-residential SRL of 13 mg/kg. PCE also exceeded the residential SRL in four other borings under the underground parking garage at multiple depths.

This parcel is currently occupied by a multi-lease office building. Outside of this parcel, no other properties were found to be impacted over SRLs. The property use is non-residential, therefore the non-residential SRL applies. Currently a physical barrier of the underground parking garage floor is preventing any direct exposure to the contaminated soils.

The above sample location that exceeded non-residential SRLs also exceeded the site-specific groundwater protection level (GPL) for PCE of 6.7 mg/kg. Recent groundwater sampling has indicated PCE concentrations increasing in groundwater in this area.

2.2 Soil Remedial Objective

Because the property with the SRL exceedances is currently and will for the foreseeable future be zoned for non-residential use, non-residential SRLs apply. Site-specific GPLs are also exceeded in this location. Based on this information, a remedial objective for the soil to meet SRLs and to be protective groundwater is:

> **To ensure soil conditions at the site do not exceed applicable SRLs as specified in A.A.C. R18-7-204, A.A.C. R18-7-205, or A.A.C. R18-7-206, or cause or threaten to cause a violation of groundwater remediation standards specified in A.A.C. R18-7-203, that are applicable to the hazardous substances identified.**

This action is needed for the present time and for as long as the level of soil contamination exceeds applicable SRLs and threatens groundwater.

3.0 REMEDIAL OBJECTIVES FOR GROUNDWATER USE

The groundwater use portion of the RI is an inclusive summary of information gathered from the water providers, the Arizona Department of Water Resources (ADWR), and well owners. One Salt River Project (SRP) well (14.0E-9.6N, ADWR # 55-608424) is located within the site, one currently inactive COP well (#57, 55-626548) is located immediately downgradient of the site.

According to ADWR imaged records, one private exempt well (55-635760) exists within a mile downgradient of the downgradient edge of the plume. Other wells located cross-gradient within one mile of the site include the currently inactive City of Phoenix well #56 (55-626547) and three private wells (55-638674, 55-218674, and 55-806789). Wells upgradient within one mile of the site are SRP well 13.5E-9.4N (55-608425), two Brophy College Preparatory School production wells (55-220153, 55-800731), and four other private wells (55-595079, 55-803822, 55-628952, and 55-640379).

According to the responses to the ADEQ questionnaires, current SRP water use within the site is for irrigation. Projected water use according to the SRP LWUS questionnaires will be water supply for domestic purposes. Currently, the COP is not using water within the site. According to the COP LWUS questionnaire, there are no immediate plans to develop new water supply resources in the area of the Site; however, COP owns water rights in the area of the site, and may be re-evaluate the area if water supply demands change. Therefore the current uses of water within the site is irrigation water. The reasonably foreseeable use of groundwater at the site is drinking water.

3.1 Summary of Impacts to Current and Reasonably Foreseeable Groundwater Use

Sample results from SRP well 14.0E-9.6N were 19 micrograms per liter (µg/L) for PCE when last sampled by SRP in January 2018. The Aquifer Water Quality Standard (AWQS) for PCE is 5 µg/L. The well is currently used for irrigation purposes only; there is no enforceable standard for PCE in irrigation water. SRP indicated in the LWUS questionnaire that despite the PCE impacts to well, they plan to continue use of the well. The foreseeable use of SRP water from the Grand Canal at the end point in Goodyear is for domestic purposes, however water from the canal will continue to include irrigation use along its route.

No private wells are located within the site. Monitoring wells that are <0.5 µg/L for PCE are located between the plume the private well (55-635760) that exists within a mile downgradient of the downgradient edge of the plume. Another private well (55-595079) is located approximately 1000 feet west of the source area of the site; its owner communicated to ADEQ that the well is not currently in use, and the owner intends to abandon it in the near future.

Seventeen monitor wells at the site were sampled in 2017. PCE has been detected at levels up to 6,400 µg/L, TCE up to 74 µg/L, and cis-1,2-DCE up to 110 µg/L. The AWQS for PCE and TCE is 5 µg/L. The AWQS for cis-1,2-DCE is 70 µg/L.

3.2 Groundwater Remedial Objective

Current groundwater use in the site is for irrigation. Future groundwater use at this site is for irrigation and domestic purposes. Multiple monitoring wells and one SRP well have exceeded AWQS for site COCs. Therefore, the RO for groundwater use at the site is:

> **To restore, replace, or otherwise provide for water for its designated use that is lost or impaired by contamination associated with the 7th Street and Missouri Avenue WQARF site. This action is needed for the present time and for as long as the need for the water exists, the resource remains available and the contamination associated with the 7th Street and Missouri Avenue WQARF site prohibits or limits the designated (irrigation or municipal) uses of groundwater.**

4.0 REMEDIAL OBJECTIVES FOR SURFACE WATER USE

SRP provides its members with water for agricultural irrigation. SRP owns and operates a piped lateral that conveys irrigation water from north to south along 7th Street. Local residential properties in and near the site are irrigated with untreated water provided by SRP. Surface water is also transported from east to west in the SRP Grand Canal, located approximately one and one-half miles south of the site. Oriented north-south from the Grand Canal, at approximate half-mile intervals are open and piped lateral canals that transport water by gravity flow southward. The lateral canals are fed by SRP production wells located in the vicinity of site.

4.1 Summary of Impacts to Current and Reasonably Foreseeable Surface Water Use

SRP plans to continue the use of the impacted SRP well at the site. There is no known current impacts from the site to the water in the SRP canals. SRP anticipates that a drinking water plant will be built on the Grand Canal within the next 100 years and the wells and facilities in the vicinity of the site will provide water to that plant. Water in man-made canals is derived from groundwater pumped by SRP wells.

4.2 Surface Water Remedial Objective

Current surface water use in the area of the site is irrigation from man-made canals containing pumped groundwater; projected future use of Grand Canal water includes drinking water. Therefore, ROs for surface water use are not necessary, as ROs for groundwater pumped into the canal are applicable.